

Amendment to Specification:

Page 2, line 6:

An apparatus for separating debris from rock on a surface free of standing water. The apparatus comprises a power vacuum source, an elongated tubular intake portion with a first diameter having an open entrance end and an opposite end wall, an elongated tubular outlet portion of a second diameter smaller than the first diameter of the intake portion including an end portion extending through the end wall into fluid communication with the interior of the intake portion and an outlet end in communication with a vacuum source, the intake portion being of a length substantially greater than that of the outlet portion. Means for grasping the apparatus in the hands of a user to facilitate advancing in a slightly raised position above the surface to permit the introduction of air, debris and rock into the intake portion whereupon any debris lighter than rock will be drawn upwardly through the outlet portion into the vacuum source and any rock lifted from the surface will return to the landscape surface.

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Figure 3 is a sectional view of the device of Figure 2, taken from the direction of ~~A-A~~ 3-3; and

Figure 4 is an enlarged view of the area ~~B~~ 4 in Figure 2, with portions of the posts to which the stove bolts are connected broken away.

As described above, the present invention relates to a method and device for cleaning a landscape surface. The principles of the invention are described below in connection with the cleaning of a landscape surface in a dry environment that includes landscape rock that forms a decorative part of the landscape, and dirt and debris that if left on the landscape surface would detract from the appearance of the landscape.

In the figures, the cleaning device 100 according to the present invention is configured for attachment to a vacuum source (shown schematically at 102 in Figure 2 & 3). The power vacuum source 102 comprises a wet dry vacuum source or any other type of vacuum power source sufficient to create advancement of the debris upwardly through the cleaning device 100. Specifically, the cleaning device 100 comprises a conduit system with an elongated tubular intake portion 106 and an elongated tubular outlet portion 108 in fluid communication with each other. The outlet portion 108 can comprise e.g. a head assembly ~~104 with~~ 104 with an integrally formed conduit 105 that is shaped as a bent elbow with ~~respective inlet and outlet~~ entrance and discharge portions 105a and 105b, respectively, that extend at an angle X relative to each other. The head assembly 104 also has a coupling structure, described more fully below, for coupling the head assembly to the intake portion 106, a hose coupling 109 configured for attachment to the vacuum source 102. When the intake portion 106 is attached to the head assembly 104, the intake portion 106 is in direct fluid communication with the ~~inlet~~ entrance portion 105a of the conduit 105, the entrance portion 105a extending centrally through an end wall 118a, and the intake portion 106 extends at a predetermined

angle to the ~~outlet~~ discharge portion 105b of conduit 105. Since the conduit 105 is in fluid communication with the vacuum source 102 and the intake conduit 106, a vacuum applied to the conduit 105 is also ~~communicated~~ in communication with the intake portion 106.

The cleaning device has a pair of handles 110, 112. A rear handle 110 is connected with the head assembly 104. A front handle 112 is connected to a location on the head assembly 104 that is near the junction of the head assembly and intake portion 106. The handles 110, 112 are preferably formed in one piece with the head assembly 104, but can also be secured to the exterior of the cleaning device by any type of connection device (e.g. the handles can be bolted, strapped or otherwise secured to the cleaning device). Provision of more than one handle enables the cleaning device to be conveniently held by an operator in an advantageous position for cleaning a landscape surface 114, in the manner contemplated by the present invention. For example, handles 110, 112 facilitate advancement of the apparatus in a slightly raised position on a surface to permit the introduction of air, debris and rock into the intake portion 106. As shown in Figures 1, 2 and 3, the handle 110 extends parallel to the longitudinal axis of the intake portion 106 and handle 112 extends at an angle to it. Any debris lighter than rock will be drawn upwardly through the outlet portion 108 into the vacuum source 102 and any rock lifted from the surface will return to the landscape surface.

The intake portion 106 has a distal end 116 with an opening 118 through which landscape material can be drawn into the intake portion 106 from the surface of the landscape. When the cleaning device is being used to clean a landscape surface 114, the cleaning

device is held by one or both handles 110, 112 in an orientation with the intake portion 106 oriented downward and the distal end 116 in close proximity to the landscape surface 114, so that the distal end 116 is essentially in contact with the landscape surface 114. The angle  $X$  that is formed in the conduit 105, and thereby extends between the intake and outlet portion is preferably not more than 135 degrees. The angle  $X$  is more preferably about 75-135 degrees, and even more preferably about 90-105 degrees. Currently, it is preferred that the angle  $X$  is about 90 degrees. The device is preferably held in an upright position, so that the intake portion 106 extends essentially at 90 degrees to the landscape surface 114 (see Figures 2, 3). Moreover, the device is configured such that it can be conveniently lifted vertically from the landscape surface 114. The concept of the cleaning device being "lifted vertically" from the landscape surface means that the cleaning device can be lifted in a substantially vertically upward direction (as shown by the arrow 115 in Figures 2, 3), if the landscape surface is substantially level and horizontal (as schematically illustrated in Figures 2, 3), or if the landscape surface has a slight slope.

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The head assembly 104 is configured to be conveniently coupled to the intake portion 106. The head assembly 104 has an outer skirt 120 that is configured to receive the upper end of the intake portion 106. The outer skirt 120 has slits at select locations, to form the skirt into sections that are flexible enough

to be clamped (tightened) against the intake portion. In the figures, a pair of slits 124, 126 are shown in the skirt 120, and cause skirt sections 120a and 120b to be formed in the skirt 120. The skirt sections are flexible enough to be clamped (tightened) against the intake portion. The skirt sections have posts that are formed in one piece with the skirt sections (see e.g. posts 130 in Figures 3, 4) and fasteners such as stove bolts 132 and nuts 134 (Figure 4) that are tightened against the posts 130, to enable the skirt sections to be clamped (tightened) against the intake portion 106. The head assembly 104 also includes an end portion 113 extending centrally through an end wall 118a into fluid communication with the interior of the intake portion 106.

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Also, the current, preferred dimensions for the various components are determined by the particular application for which the device of the present invention is configured. As shown in Figure 3, the intake portion 106 has a first diameter 121 and the outlet portion 108 has a smaller diameter 119 than the intake portion so as to increase the velocity of the air as it flows into the outlet portion while reducing its pressure under the well-known Bernoulli conservation of energy principle. For example, a smaller version of the cleaning device of the invention, which would be e.g. for home use, would include an intake portion 106 with an inner diameter 121 from 3.75 inches to 4.75 inches, an outer diameter tube enables the head assembly to be conveniently clamped (tightened) against the intake portion, a head assembly 104 with

a conduit 105 having an inner diameter 119 of about 2 inches, and a bend X in the conduit 105 of up to 135 degrees (90 degrees is currently preferred), and a tapered hose coupling 109 that will conveniently attach to the vacuum source (a wet/dry vacuum of about 16 gallons capacity generally has a 2 inch inside diameter hose coupling). The reason the range of the inner diameter works best with larger mass landscape material, and a larger inner diameter works best with lighter mass landscape material. A larger version of the device of the invention (intended more for commercial use) would include, e.g., an intake portion 106 with an inner diameter 121 of about 6 inches, and a head assembly 104 with a conduit 105 having an inner diameter 119 of about 3 inches. The bend X in the conduit 105 would be similar to the bend in the smaller version. In either version, it is contemplated that the inner diameter 119 of the conduit 105 will be smaller than the inner diameter 121 of the intake portion 106. This results in an acceleration of the air flow in the outlet portion 108, encouraging rocks and debris to pass upwardly along the flow passage 120. End wall 118a acts as a deflection surface preventing rocks from entering the outlet portion 108. In addition, it is contemplated that the vacuum source 102 would be a wet/dry vacuum source. Also, the height of the intake portion 106 will be designed such that the cleaning device can be conveniently held by an operator with the intake portion 106 in a vertical position relative to the landscape surface 114, and such that the cleaning device can be conveniently lifted vertically from the landscape surface. Necessarily, the intake portion 106 is of a length substantially greater than that of the outlet portion 108. The combination of the intake portion